Association of Gastrostomy Placement on Hospital Readmission in Premature Infants

Timothy L. Duncan, B.A.[1], **Julius Ulugia, B.A.**[1], **Brian T. Bucher, MD, MS**[1]

[1.]Division of Pediatric Surgery, Department of Surgery, University of Utah School of Medicine

Abstract

Objective: We sought to determine the association of gastrostomy placement on post NICU-discharge resource utilization in premature infants.

Study Design: We performed a propensity-matched retrospective cohort study of NICU infants born under 32-weeks' gestation in US Children's Hospitals. Multivariable logistic regression and propensity score-matching were used to determine the association of gastrostomy placement on 90-day hospital readmissions and emergency department visits adjusting for salient patient characteristics.

Result: A total of 12,621 premature infants were included of which 697 (5.5%) underwent gastrostomy placement. After propensity matching, infants who underwent gastrostomy placement have a higher rate of 90-day inpatient readmission (41.9% vs 26.3%, p<0.001) and emergency department visit (27.1% vs 16%, p<0.001).

Conclusion: Premature infants who undergo gastrostomy placement have increased risk of inpatient readmission and emergency department visits after NICU discharge. Gastrostomy placement likely is both a driver and marker for increased resource utilization in premature infants post NICU discharge.

INTRODUCTION

Premature infants are at high risk for requiring long term enteral access due to increased caloric requirement, poor neurologic development, and immature gastrointestinal function

CORRESPONDING AUTHOR: Brian T. Bucher, MD, Division of Pediatric Surgery, Department of Surgery, University of Utah School of Medicine, 100 North Mario Capecchi Drive, Suite #3800, Salt Lake City, UT 84113, Phone: 801-662-2950, Fax: 801-662-2980, brian.bucher@utah.edu.

which all lead to inadequate oral intake and the need for enteral supplementation.[1, 2] Commonly, gastrostomy tubes (G-tubes) are placed during Neonatal Intensive Care Unit (NICU) hospitalization to allow for secure enteral access at the time of discharge.[3] Previous studies have demonstrated the prevalence of gastrostomy placement in premature infants born less than 32-week gestation varies between 0–20%.[3] At one year after NICU discharge, approximately 40% of infants remain gastrostomy dependent.[4] However, the duration of the need for gastrostomy feedings is difficult to predict. In addition, there are no clear guidelines on the indications for gastrostomy placement in premature infants. Due to the heterogenous nature of this population, prospective studies are difficult and limited to specific populations such as children with congenital heart disease or neurodevelopmental delay.[5, 6] Thus, the appropriate indications and timing for gastrostomy placement in premature infants remain unclear.[7]

Placement of G-tubes has been associated with increased healthcare utilization in pediatric populations.[8, 9] Gastrostomy placement itself is associated with complications such as infections and dislodgement.[10] These complications can lead to an increased risk of inpatient readmissions and emergency department visits immediately after gastrostomy placement.[8] Complications are not only short term; gastrostomy placement has also been associated with increased inpatient hospitalizations in the year following placement in neurologically impaired children.[11]

Given the high resource utilization by premature infants, the lack of guidelines on placement of G-tubes in these patients, and the consequences associated with G-tube placement in older pediatric patients, the present study aims to assess the association between gastrostomy placement and healthcare resource utilization in premature infants after NICU discharge. We hypothesize that G-tubes will be associated with increased risk of inpatient readmission and emergency department visits following NICU discharge.

SUBJECTS AND METHODS

DATA SOURCES AND COHORT DESIGN

We conducted a retrospective cohort study using the Pediatric Health Information System Database (PHIS). PHIS is an administrative database that contains inpatient, emergency department, ambulatory surgery, and observation encounter level data from 52 not for profit, tertiary care pediatric hospitals in the United States. These hospitals are affiliated with the Children's Hospital Association (Lenexa, KS). Data quality and reliability are assured through a joint effort between the Children's Hospital Association and participating hospitals. Portions of the data submission and data quality processes for the PHIS database are managed by Truven Health Analytics (Ann Arbor, MI). For the purposes of external benchmarking, participating hospitals provide discharge/encounter data including demographics, diagnoses, and procedures. Nearly all of these hospitals also submit resource utilization data (e.g. pharmaceuticals, imaging, and laboratory) into PHIS. Data are de-identified at the time of data submission, and data are subjected to a number of reliability and validity checks before being included in the database. In this present study we used data from 46 children's hospitals. The study was approved by the University of Utah institutional review board with a waiver of informed consent.

All infants born at gestational ages 23–33 weeks and hospitalized in the NICU between June 1, 2013 and May 31, 2015 at 46 hospitals were included in the study. Patients were excluded if they expired during the NICU admission or if they were admitted to the NICU after 30 days of age.

PRIMARY EXPOSURE AND OUTCOME:

The primary variable being evaluated was placement of a G-tube during the NICU admission. Gastrostomy placement was defined using International Classification of Diseases, Ninth Revision (ICD-9), codes 43.11 (Percutaneous Endoscopic Gastrostomy) and 43.19 (Other Gastrostomy).

The primary outcome was defined as an inpatient readmission to the index hospital within 90 days of NICU discharge. The secondary outcome was defined as an emergency department visit to the index hospital within 90 days of NICU discharge.

COVARIATES

PHIS provides data regarding patient demographics, including race, ethnicity, payer sources, and birthweight. Patient gestational age was determined using a combination of the specific gestational age data provided in PHIS and International Classification of Diseases 9 (ICD-9) diagnosis codes representing gestational age. NICU encounter covariates included year, length of stay, and discharge disposition. We used the Agency for Healthcare Research and Quality Clinical Classification Software (CCS) to model patient comorbidities and other surgical procedures based on encounter ICD-9 diagnosis and procedure codes (See Supplementary Appendix). The following covariates were included: central nervous system (CNS) infection, cardiac arrest, major congenital cardiac anomalies, minor congenital cardiac anomalies, digestive anomalies, neurologic anomalies, cleft lip or cleft palate, congenital tracheal anomalies, congenital diaphragmatic hernia, congenital abdominal wall anomalies, congenital chromosome abnormalities, and birth asphyxia. The following surgical procedures were modeled as covariates: ventricular shunt placement, congenital heart surgery, and major gastrointestinal surgery.

Gastrostomy complicated were identified using the following ICD-9 codes 536.40 (Gastrostomy complication, unspecified), 536.41 (Infection of gastrostomy), 536.42 (Mechanical complication of gastrostomy), 536.49 (Other gastrostomy complications).

STATISTICAL ANALYSIS

GENERAL—Statistical analysis was performed using R (Version 3.4.1). Univariate analysis was performed using Wilcoxon Rank Sum tests for continuous variables or Chi-square test for discrete variables. Two-tailed p-values of <0.05 were used to indicate statistical significance.

PROPENSITY MATCHING

Propensity matching has been used to adjust for baseline confounding in observational studies.[11] We implemented propensity score-based matching to balance patient level co-variates between patients who did and did not undergo gastrostomy placement. To estimate

propensity score of receiving a G-tube we developed a logistic regression model to determine the probability of G-tube placement based on patient-level covariates. We started by including all covariates with a univariate p-value of <0.1. We then performed bidirectional stepwise logistic regression to select covariates that remain in the model with a p-value of <0.05. The final model included the following patient-level covariates: race, gestational age, digestive anomaly, tracheal anomaly, neurologic anomaly, other congenital abnormalities and chromosome abnormalities, disposition, atrial septal defect, ventricular shunt, cleft lip, abdominal wall anomaly, major cardiac anomaly, birth asphyxia, length of stay, and payer.

After calculation of propensity scores, patients who did and did not receive G-tubes were matched in 1:1 ratio using the probability of the nearest neighbor within a 0.02 standard deviation range. Propensity score modeling and matching were performed using the 'MatchIt' package in R[12].

MULTIVARIABLE ANALYSES

After propensity matching, we performed several analyses to determine the effect of gastrostomy placement on the primary outcome of 90-day inpatient readmission. We initially performed a univariate analysis to determine the effect of gastrostomy placement on our primary outcomes of 90-day emergency department visit and inpatient readmission. In addition, we performed a sensitivity analysis to determine the association between gastrostomy placement and our primary outcomes after excluding patients with gastrostomy related complications.

We then developed a multivariable logistic regression model to assess the association of gastrostomy placement with our primary outcome of 90-day inpatient readmission. A bidirectional stepwise selection approach was used to develop the final multivariable logistic regression model. Model discrimination was assessed using the area under the receiver operating curve. Model calibration was assessed using the Brier score. In the final model, the following independent variables were included: gastrostomy placement, congenital abdominal wall anomaly, and gastrointestinal surgery. Using an identical analysis, we also tested the association of gastrostomy placement with 90-day emergency department visits. In the final model for emergency department visits, the following variables were included: gastrostomy placement, gastrointestinal surgery, and race and ethnicity.

RESULTS

PATIENT CHARACTERISTICS

A total of 12,621 premature infants that met inclusion criteria were included in the study. The characteristics of this cohort are shown in Table 1. Of the included patients, 697 (5.5%) had G-tubes placed during the NICU admission. Overall, the patients who had G-tubes placed had lower gestational ages (27.5 vs 29.1, p<.001), lower birthweights (1.03 kg vs. 1.33 kg, p<.001), and longer length of NICU stay (161.9 vs 56.2, p<.001) (Table 1). In addition, patients who had G-tubes had significantly higher rates of gastrointestinal surgery, congenital heart surgery, and a number of congenital anomalies including neurologic,

cardiac, digestive, tracheal, abdominal wall, and chromosomal anomalies, and cleft lip and palate compared to those who did not receive G-tubes.

PROPENSITY MATCHING

Given the differences in patient characteristics between infants who did and did not receive G-tubes, we performed 1:1 propensity matching to identify patients at equal risk of gastrostomy placement. Propensity matching yielded a balanced cohort of 988 infants, 494 infants who underwent gastrostomy placement and 494 infants who did not (Table 2). After propensity matching, patients who underwent gastrostomy continued to have significantly lower gestational ages (27.3% vs. 27.7%, p=.04) and presence of Patent Ductus Arteriosus (55% vs 62%, p=.02).

OUTCOMES

Prior to propensity matching, the 90-day inpatient readmission rate for patients who underwent gastrostomy was 42.5% compared to 16.5% in patients who did not (p<.001) (Table 3). The 90-day emergency department visit rate for patients who underwent gastrostomy was 28.6% compared to 12.3% in those who did not (p<.001). After propensity matching, patients who underwent gastrostomy placement continued to have an increased rate of 90-day inpatient readmission compared to those who did not (41.9% vs 26.3%, p<0.001). In addition, patients who underwent gastrostomy placement continued to have an increased rate of 90-day emergency department visit compared to those who did not (27.1% vs 16%, p<0.001).

In a sensitivity analysis we sought to determent if gastrostomy related complications were associated with the increase in 90-day emergency department visits and inpatient readmissions. We identified and excluded patients with gastrostomy-related complications from the full cohort and the propensity-matched cohort. In the full cohort, after removal of gastrostomy related complications, patients who had a gastrostomy tube placed continued to have a statistically significant increase in 90-day emergency department visit rate (20.5% vs 12.3%, p<0.001) and readmission rate (36.3% vs 16.5%, p<0.001). In the propensity matched cohort, after removal of gastrostomy related complications, there continued to be a significantly increased rate of 90-day inpatient readmissions (35.2% vs 26.3%, p<0.001). However, there was no longer a significant association between gastrostomy placement and 90-day emergency department visits (19.0% vs 16%, p=0.21).

MULTIVARIABLE ANALYSIS

We next performed a multivariable logistic regression analysis on the propensity matched cohort to determine the independent predictors of 90-day inpatient readmission and emergency department visit. The significant predictors of 90-day inpatient readmission after NICU discharge included: gastrostomy placement (adjusted OR [95% Confidence Interval (CI)]: 2.1 [1.6–2.7], p<0.001, abdominal wall anomaly (adjusted odds ratio (aOR) [95% CI]: 4.7 [1.7–15.2], p=0.004), and gastrointestinal surgery (aOR [95% CI]: 1.7 [1.2–2.4], p=0.002). (Table 4) The significant predictors of 90-day emergency department visit after NICU discharge included: gastrostomy placement (aOR [95% CI]: 2.1 [1.5–2.9], p<0.001), gastrointestinal surgery (aOR [95% CI]: 1.7 [1.2–2.5], p=0.004), non-Hispanic black race

(aOR [95% CI]: 3.0 [2.0–4.5], p<0.001), Hispanic race (aOR [95% CI]: 1.6 [1.0–2.4], p=0.04). (Table 5)

DISCUSSION:

The present study is a retrospective cohort study of premature infants at 46 Children's Hospitals. Gastrostomy placement was infrequent (5.7%) in the patient cohort. We showed that among premature infants in a propensity matched cohort, those who underwent gastrostomy placement had a significantly increased risk of both inpatient readmission and emergency department visits within 90 days of NICU discharge. In addition, we identified significant predictors for both readmission and emergency department visits which included gastrostomy placement, gastrointestinal surgery, and Hispanic or Non-Hispanic Black race.

Previous studies have established the association of G-tubes with high rates of readmission following NICU discharge. Kuo et al performed a retrospective cohort study of premature infants and identified 1-year post NICU discharge readmission rates to be 36.8%.[13] Moreover, the same study found the patient-level variable with the highest odds ratio for readmission was 'dependence on medical technology' (i.e. gastrostomy, tracheostomy, supplemental oxygen). Lee et al showed a readmission rate of 33.6% for a similar population, but did not include G-tubes as a factor.[14] Our study showed a 90-day readmission rate of 17.9% in the full cohort. This is lower than the mentioned studies but this can likely be attributed to the shorter follow-up period in our study. In the propensity matched cohort, the overall readmission rate was 34.1%. This rate is similar to that found in the studies mentioned, but occurred during the 90-day follow-up period compared to the 1-year follow-up in those studies. This is likely due to selection for patients with increased severity of disease during propensity matching in our study. However, similar to Kuo et al, our study found the presence of a G-tube to be a significant factor associated with readmission in both the full cohort and propensity matched cohort. Given that gastrostomy tube placement continues to be associated with inpatient readmission even after excluding gastrostomy related complication indicates gastrostomy placement can serve as an indicator for patients at increased risk of readmission after NICU discharge.

G-tubes have also been shown to be associated with increased risk for emergency department visits. Kuo et al found 1-year post NICU discharge emergency department visit rates to be 36.8% in a population of premature infants[13]. As with readmissions, 'dependence on medical technology' was the most significant factor associated with emergency department visits. Our study showed a 90-day emergency department visit rate of 13.2% in the full cohort. This is lower than the previous studies but likely due to a shorter follow-up period. However, similar to Kuo et al, the present study found the presence of a G-tube to be a significant factor associated with emergency department visits in the full cohort. In our sensitivity analysis, when patients with emergency department visits associated with G-tube complications were removed from the propensity matched cohort, there was no longer a statistically significant increase in emergency department visits for patient with G-tubes. This indicates that while disease severity likely plays a role in increased resource utilization in premature infants with gastrostomy tubes, gastrostomy related complications may be contributing to the increased rate of 90-day emergency department visits. Further studies

may also be beneficial in analyzing factors contributing to the correlation between Hispanic and Non-Hispanic Black race as a risk factor for increased emergency department visits. We hypothesize this result may be related to disparities in healthcare access in children and requires addition studies to including patient, hospital, and community-level factors.

Our results suggest the effect of gastrostomy placement on resource utilization after NICU discharge in premature infant is a complex interaction between disease severity and gastrostomy related complications.[13, 14] This association may prompt future studies to prospectively evaluate the benefits and risks associated with the use of G-tubes compared to other methods, such as nasogastric tubes, in the treatment of premature neonates. A number of studies and programs have come about that show promise in reducing the burden of gastrostomy tubes by utilizing other feeding methods or by transitioning gastrostomy patients to other feeding methods prior to NICU discharge. Nasogastric tubes are the primary alternative method for providing enteral nutrition for premature infants. Khalil et al. demonstrated that feeding with nasogastric tubes at time of discharge was associated with significantly fewer emergency department visits 1-year post NICU discharge compared to gastrostomy tubes (33.6% vs 9.5%, P < .001) as well as a significantly higher rate of transition to oral feeding by six months compared to patients with gastrostomy tubes (71.4% vs 19.3%, P<.001)[15]. Jadcherla et al. used "process optimization, implementation of feeding strategy, monitoring compliance, multidisciplinary feeding rounds, and continuous education strategies" to improve time to attainment of feeding milestones in NICU neonates[16]. Approaches such as these show important progress in reducing post-NICU resource utilization by premature infants. The authors attempted to utilize the PHIS database to identify premature infants discharged with nasogastric tubes as these patients would serve as a strong comparison population; however, the lack of reliable administrative data fields for nasogastric tube limited this approach.

There are a number of limitations to this study. First, the study was performed using an existing data set and was limited to the available data. Second, while ICD-9 and CCS codes categorize disease, they do not indicate disease severity. Therefore, patients grouped together by medical condition may have very different clinical pictures. Next, the decision to place a G-tube is clinical and there are factors that influence the decision that are not accounted for in our data set. These factors may include weight gain trajectory, infections, and clinical presentation, among others. We acknowledge the importance of clinical judgement in this matter. Our study aimed to minimize the effect of these unknowns using propensity matching. Finally, because many pediatric hospitals serve large geographical areas, some patients were likely seen at non-index facilities for emergency department visits and admissions that we cannot account for[17].

Premature infants who have G-tubes placed while in the NICU are at increased risk of emergency department visits and readmissions within 90-days of discharge compared to similar patients who do not have G-tubes. While the increase risk of emergency department visits may mediated by gastrostomy related complications, gastrostomy placement is also likely a marker indicating increased disease severity of infants at risk for readmission. These findings can be considered when weighing the risks and benefits of gastrostomy in

premature infants in the treatment of premature patients and may be useful in identifying patients for targeted efforts to decrease resource utilization after NICU discharge.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements:

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Table 1.

Demographics, comorbid conditions, and procedures for all study subjects.

Variable	Gastrostomy (n= 697)	No Gastrostomy (n= 11924)	P-value
Gestational age, weeks, median (IQR)	27 (25–30)	30 (27–32)	<.001
Birth weight, grams, median (IQR)	910 (690–1290)	1320 (964–1660)	<.001
Length of stay, days, median (IQR)	146 (108–198)	47 (29–77)	<.001
Sex, Male, n (%)	393 (56)	6509 (55)	<.001
Race & Ethnicity, n (%)			
Hispanic	100 (14)	1811 (15)	0.11
Non-Hispanic Black	141 (20)	2429 (20)	0.18
Non-Hispanic White	371 (53)	5576 (47)	<.001
Other	85 (12)	2108 (18)	<.001
Disposition, n (%)			
Home	477 (68)	9304 (78)	<.001
Home health/Hospice	10 (1)	115 (1)	0.11
Other/Unknown	20 (3)	137 (1)	<.001
Other Healthcare Facility	190 (27)	2368 (20)	<.001
Payer, n (%)			
Commercial Insurance	235 (34)	4672 (39)	<.001
Government Program	457 (66)	6972 (58)	0.001
Other	4 (<1)	152 (1)	0.2
Self-Pay	1 (<1)	128 (1)	0.06
Procedures, n (%)			
Ventricular Shunt	63 (9)	247 (2)	<.001
Heart Surgery	29 (4)	55 (<1)	<.001
Gastrointestinal Surgery	146 (21)	522 (4)	<.001
ECMO	4 (<1)	10 (<1)	0.001
Neurologic Conditions, n (%)			
CNS Infection	37 (5)	227 (2)	<.001
Neurologic Anomaly	95 (14)	439 (4)	<.001

Variable	Gastrostomy (n= 697)	No Gastrostomy (n= 11924)	P-value
Birth Asphyxia	42 (6)	324 (3)	<.001
Cardiac Conditions n (%)			
Cardiac Arrest	7 (1)	11 (<1)	<.001
Congenital Cardiac Anomaly	223 (32)	1424 (12)	<.001
Atrial Septal Defect	373 (54)	3236 (27)	<.001
Ventricular Septal Defect	66 (9)	395 (3)	<.001
Patent Ductus Arteriosus	409 (59)	3516 (29)	<.001
Gastrointestinal Conditions, n (%)			
Digestive Anomaly	127 (18)	417 (3)	<.001
Cleft Lip/Cleft Palate	14 (2)	38 (<1)	<.001
Tracheal Anomaly	111 (16)	140 (1)	<.001
Congenital Diaphragmatic Hernia	14 (2)	28 (<1)	<.001
Abdominal Wall Abnormality	13 (2)	104 (1)	0.01
Other Conditions, n (%)			
Other Congenital Abnormalities and Chromosome Abnormalities	116 (17)	415 (3)	<.001

IQR: Interquartile Range, ECMO: Extracorporeal Membrane Oxygenation, CNS: Central Nervous System

Table 2.

Demographics, comorbid conditions and procedures for propensity matched cohort.

Variable	Gastrostomy (n= 494)	No Gastrostomy (n= 494)	P-value
Gestational age, weeks, median, (IQR)	27 (25–30)	27 (25–30)	0.04
Birth weight, grams, median, (IQR)	950 (700–1350)	890 (720–1228)	0.15
Length of stay, days, median, (IQR)	127 (96–164)	119 (89–155)	0.28
Sex, Male, n (%)	275 (56)	266 (54)	0.69
Race & Ethnicity, n (%)			
Hispanic	84 (17)	78 (16)	0.44
Non-Hispanic Black	90 (18)	86 (17)	0.52
Non-Hispanic White	254 (51)	271 (55)	0.46
Other	66 (13)	59 (12)	0.38
Disposition, n (%)			
Home	354 (72)	358 (72)	0.88
Home health/Hospice	4 (1)	6 (1)	0.54
Other/Unknown	14 (3)	11 (2)	0.54
Other Healthcare Facility	122 (24)	119 (24)	0.81
Payer, n (%)			
Commercial Insurance	167 (34)	167 (34)	1
Government Program	323 (65)	324 (66)	0.98
Other	3 (1)	2 (<1)	0.66
Self-Pay	1 (<1)	1 (<1)	1
Procedures, n (%)			
Ventricular Shunt	41 (8)	45 (9)	0.73
Heart Surgery	11 (2)	16 (3)	0.44
Gastrointestinal Surgery	86 (17)	100 (20)	0.29
ECMO	2 (<1)	3 (1)	1
Neurologic Conditions, n (%)			
CNS Infection	23 (5)	32 (6)	0.27
Neurologic Anomaly	69 (14)	62 (13)	0.57

Variable	Gastrostomy (n= 494)	No Gastrostomy (n= 494)	P-value
Birth Asphyxia	29 (6)	35 (7)	0.52
Cardiac Conditions, n (%)			
Cardiac Arrest	4 (1)	2 (<1)	0.68
Congenital Cardiac Anomaly	135 (27)	152 (31)	0.26
Atrial Septal Defect	247 (50)	276 (56)	0.07
Ventricular Septal Defect	40 (8)	34 (7)	0.55
Patent Ductus Arteriosus	270 (55)	306 (62)	0.02
Gastrointestinal Conditions, n (%)			
Digestive Anomaly	74 (15)	82 (17)	0.54
Cleft Lip/Cleft Palate	10 (2)	8 (2)	0.81
Tracheal Anomaly	52 (11)	54 (11)	0.92
Congenital Diaphragmatic Hernia	8 (2)	7 (1)	1
Abdominal Wall Abnormality	10 (2)	8 (2)	0.81
Other Conditions, n (%)			
Other Congenital Abnormalities and Chromosome Abnormalities	66 (13)	59 (12)	0.57

IQR: Interquartile Range, ECMO: Extracorporeal Membrane Oxygenation, CNS: Central Nervous System

Table 3.

Rates of 90-day inpatient readmission and emergency department visits in the full cohort and propensity matched cohort

	90-day Inpatient readmission			90-day Emergency Visit		
	Gastrostomy	No Gastrostomy	P-value	Gastrostomy	No Gastrostomy	P-value
Full Cohort, n (%)	296 (42.5%)	1965 (16.5%)	<.001	199 (28.6%)	1472 (12.3%)	<.001
Full Cohort Excluding Gastrostomy Related Complications, n(%)	253 (36.3%)	1965 (16.5%)	<.001	143 (20.5%)	1472 (12.3%)	<.001
Propensity Matched Cohort, n (%)	207 (41.9%)	130 (26.3%)	<.001	134 (27.1%)	79 (16%)	<.001
Propensity Matched Cohort Excluding Gastrostomy Related Complications, n(%)	174 (35.2%)	130 (26.3%)	<.001	94 (19.0%)	79 (16%)	0.21

Table 4.

Multivariable analysis of independent risk factors associated with 90-day inpatient readmission

Variable	Odds Ratio	95% Confidence Interval	P-value
Gastrostomy Placement	2.1	1.6–2.7	<.001
Abdominal Wall Anomaly	4.7	1.7–15.2	0.004
Gastrointestinal Surgery	1.7	1.2–2.4	0.002

Table 5.

Multivariable analysis of independent risk factors associated with 90-day emergency department visit

Variable		Odds Ratio	95% Confidence Interval	P-value
Gastrostomy Placement		2.1	1.5–2.9	<.001
Gastrointestinal Surgery		1.7	1.2–2.5	0.004
Race	Non-Hispanic White	Ref	Ref	Ref
	Non-Hispanic Black	3	2.0–4.5	<.001
	Hispanic	1.6	1.0–2.4	0.04
	Other	0.8	0.5–1.4	0.54